

Patent Application
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ABSTRACT

A method of forming a trench MOSFET device includes depositing an epitaxial layer over a substrate, both having the first conductivity type, the epitaxial layer having a lower majority carrier concentration than the substrate, forming a body region of a second conductivity type within an upper portion of the epitaxial layer, etching a trench extending into the epitaxial layer from an upper surface of the epitaxial layer, the trench extending to a greater depth from the upper surface of the epitaxial layer than the body region, forming a doped region of the first conductivity type between a bottom portion of the trench and substrate, the doped region having a majority carrier concentration that is lower than that of the substrate and higher than that of the epitaxial layer, wherein the doped region is diffused and spans 100% of the distance from the trench bottom portion to the substrate, forming an insulating layer lining at least a portion of the trench, forming a conductive region within the trench adjacent the insulating layer and forming a source region of said first conductivity type within an upper portion of the body region and adjacent the trench.